

**MILITARY SEALIFT COMMAND****LIFEBOAT SAFETY**

During a recent U.S. Coast Guard inspection, an MSC oiler experienced an inadvertent release of the forward hook assembly while lowering the lifeboat. This caused the lifeboat to dangle from the aft hook assembly momentarily before the lifeboat plunged into the water. An investigation into the cause of the mishap was then initiated. The focus of the investigation revolved around the lifeboat's releasing gear and the forward hook assembly. This mishap is one of many in recent years that have highlighted a growing concern in the international maritime community over the number of incidences involving lifeboats.

In a study by the Marine Accident Investigation Board (MAIB) of Great Britain over a ten year period, it was found that lifeboats and their launching systems (only on British Commonwealth flagged vessels) cost the lives of 12 mariners and another 87 mariners were injured. The striking point to this study was that all the accidents happened during training exercises or when testing the lifeboats. The study revealed over-complicated lifeboat launch systems and their components that required extensive training to operate as the primary cause of



many of the accidents. Additionally, a combined study by the Oil Companies International Marine Forum (OCIMF), the International Association of Independent Tanker Owners (INTERTANKO) and the Society of International Gas Tanker and Terminal Operators (SIGTTO) found that the vast majority of accidents involving totally enclosed, davit launched lifeboats involved equipment failure, primarily the releasing gear and hook assemblies.

SOLAS Regulation III/19 requires that each lifeboat "shall be launched, and maneuvered in the water by its assigned operating crew, at least once every three months during an abandon ship drill." The Marine Safety Committee (MSC) of the International Maritime Organization (IMO) had to respond to a growing concern amongst shipping companies regarding

the increasing number of lifeboat incidents worldwide. Shipping companies were concerned for the safety of their personnel traveling in lifeboats while conducting the mandatory training. The MSC responded with three circulars in June 2009:

- Circ. 1206/Rev.1 - Measures to Prevent Accidents with Lifeboats
- Circ. 1326 – Clarification of SOLAS Regulation III/19
- Circ. 1327 – Guideline for the Fitting and Use of Fall Preventer Devices (FPDs)

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In Circ. 1326 the MSC clarified Regulation III/19. Although III/19 requires crewmembers to operate the boat in the water, it does NOT require the operating crew to be onboard the lifeboat when it is launched. Mariners may board the lifeboat by ladder, launch boat or other means once the lifeboat is waterborne. However, III/19 does give the Master the option, “within the authority conferred to him by paragraph 5.5 of the ISM Code,” when all safety aspects are considered (environmental conditions, freeboard length), to launch a lifeboat with the operating crew onboard. As an added safety feature, Circ. 1206/Rev.1 recommends that prior to the operating crew riding aboard a lifeboat during a drill; the lifeboat should first be launched and recovered without persons onboard to determine that the equipment is functioning properly.



Photo from SchatHarding

In 1986, the SOLAS Convention made mandatory on-load release hooks for lifeboats and rescue boats. On-load can be defined as a method where hooks can be disengaged even if the falls and blocks are still under a load. Two safety features are built into the release mechanism to prevent that: a safety pin for the releasing handle and a hydrostatic interlock that prevents the lifeboat from being released until it is waterborne. However, on-load release hooks are inherently designed as unstable. The release system is designed to maintain the hooks in a closed position. Defects or faults in the releasing mechanism, errors by the crew or incorrect resetting of the hook after being previously operated can all result in a hook's failure and subsequent premature release.

The MAIB report mentioned on page one stated that the operating crews of the lifeboats had a poor understanding on how to operate release hooks or properly reset them after recovering the boats. Mariners need to fully appreciate the complications of on-load release hook mechanisms and ensure that the hooks are properly secured and the hydrostatic interlock system is functioning properly. In depth training on a consistent basis, clear and unambiguous instructions posted for clarity during emergency situations and taking each abandon ship drill as an opportunity to reinforce one's knowledge and skills will reduce the chances of a mishap.

In Circ. 1206, the MSC approved guidelines for periodic servicing and maintenance of lifeboats, launching appliances and on-load release gear. It is the intent of these guidelines for shipowners to employ certified lifeboat manufacturer representatives to carry out annual examination and testing of lifeboats and their releasing mechanisms. These are separate from the manufacturer's recommended weekly and monthly inspections and routine maintenance by the ship's crew. MSFSC has a number of periodic maintenance items that are specific to Lifeboat and Davit Maintenance whose periodicity should be strictly monitored. The annual servicing of lifeboats is a necessary preventative maintenance requirement that proactively seeks out changes in equipment tolerances due to operational wear and the deteriorating effects of salty air, weather and vibration.

The lifeboat is a life saving vehicle that is not supposed to be second guessed. Through a preventative maintenance program and an increased level of training, chances of a future lifeboat incident involving MSC mariners can be greatly reduced. The recent MSC fleet wide safety stand down was designed to increase operational knowledge and have mariners operate lifeboats with heightened caution. The OCIMF has produced *Survival Craft – A Seafarers Guide*, a very practical guide that could be used during on-board training. Any near miss or lessons learned during abandon ship drills should be passed through the MFSC Safety Management System for the benefit of the entire fleet.

# Do I need to submit a mishap report ?

There continues to be some confusion over mishap reporting in the MSC fleet. Hopefully, this will help give you a clear picture of mishap reporting requirements or where to turn for help. It never hurts to report when in doubt. Mishap information is used to track trends in safety and to determine where to focus safety efforts in the future. Mishap reports are also used to report incidents to the Navy in their Web Enabled Safety System (WESS).

A Class "C" Mishap results in total damages greater than \$50,000 but less than \$500,000 or an event involving one or more individuals, that results in one or more days away from work. This means if a CIVMAR gets hurt on Monday, and can not work on Tuesday, a Class "C" mishap report should be filed. The MSC Hazard/ Near Miss/ First Aid/ Mishap Report needs to be submitted within 5 days of the incident. Some mishap reports are received, but incomplete. If a class "C" mishap occurs, ships are required to do an investigation. The investigation should include corrective actions taken and lessons learned. These two areas on the MSC Hazard/ Near Miss/ First Aid/ Mishap Report are too often left blank or entered with safety phrases such as "Be safe" or "Pay attention". A thorough investigation of an incident can result in lessons learned and corrective actions that can be shared with the fleet and prevent future injuries. Many incident investigations will reveal a deficiency at the headquarters level such as, an outdated procedure or items that should have been in the maintenance systems (SAMS).

## *Good example of Corrective Action and Lessons Learned entries:*

*Corrective Action (retraining, PPE, procedures, design, etc.) First Officer/Safety Officer recreated the mishap chain of events. Employee stated that he would adjust the length of the quick release lanyard to prevent the possibility of the accident mechanism being repeated. (This was later verified by the Safety Officer that the action was completed.) The Cargo Mate and Cargo Boatswain were notified to ensure that the other stations were checked for similar conditions.*

*Lessons Learned (Ship's Force Input) Tensioned lines may spring back or whip around when released either intentionally or inadvertently. Employee's working around tensioned lines must be aware of the dangers involved and need to think ahead before releasing tensioned lines. Personnel cannot afford to become complacent because often this leads to injuries/accidents.*

If a CIVMAR is injured but is back to work the next day, a first aid report should be filed. This can be done on the same form (MSC Hazard/ Near Miss/ First Aid/ Mishap Report). Near miss reporting is getting better. In FY 2009 we received 18 near miss reports. Half way through FY 2010 we have surpassed that number. Near miss reports are also filed on the MSC Hazard/ Near Miss/ First Aid/ Mishap Report.

Do I need to report contractor injuries? If the worker has a supervisor who is not associated with the ship then it is not reported to the Navy in WESS. If a contractor is hired by the ship and the ship gives this contractor his daily assignments, then it is reportable to the Navy and a MSC Hazard/ Near Miss/ First Aid/ Mishap Report should be submitted. Again, when in doubt, report it!

## Safety First Half of FY10

**Thank you to the MSC Ships and Crews that continue to report mishaps and near misses!**

The pie chart on the following page displays Class C incidents, first aid cases, and near misses for the first half of FY 2010. Our MSC fleet has had zero class A incidents, zero class B incidents, 40 class C incidents, 152 first aid cases, and reported 17 near misses during the first half of FY 2010 . Near Miss reporting is improving! Keep up the good work. Lifting injuries are down however contact injuries and slip/ trips/ falls are up.

### Near Miss Incidents: 17

|                                 |                                    |                 |                |
|---------------------------------|------------------------------------|-----------------|----------------|
| Slips/Trips/Falls-1<br>Spill -1 | Fires - 5<br>Equipment failure - 2 | Mat. Damage - 1 | Collisions - 7 |
|---------------------------------|------------------------------------|-----------------|----------------|

### First Aid Incidents: 152

|                           |                   |                |                |
|---------------------------|-------------------|----------------|----------------|
| Slips/Trips/Falls - 46    | Debris in eye - 9 | Exertion - 3   | Equip Fail - 2 |
| Lifting /Back Injury - 21 | Cuts/Knife - 11   | Chipping - 2   | Strain - 3     |
| Contact - 28              | Pulling - 3       | Repetition - 4 | Other - 4      |
| Pinch Points - 12         | Burn - 3          | Fire - 1       |                |

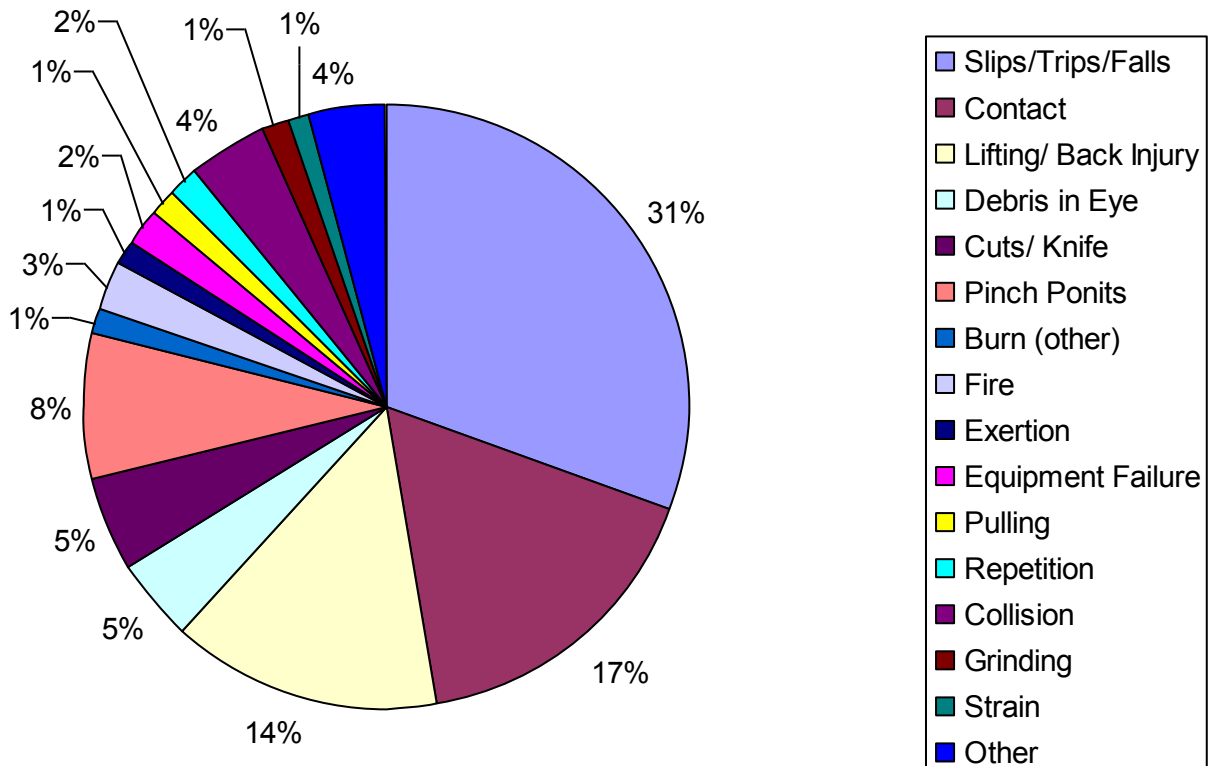
### Class C Incidents : 51

|                           |                   |
|---------------------------|-------------------|
| Slips/Trips/Falls - 21    | Chipping - 1      |
| Lifting /Back Injury - 11 | Collision - 2     |
| Contact - 9               | Electric - 1      |
| Pinch Points - 5          | Debris in Eye - 1 |

### Totals Incidents: 220

|                           |                    |                |                |
|---------------------------|--------------------|----------------|----------------|
| Slips/Trips/Falls - 68    | Debris in eye - 10 | Exertion - 3   | Equip Fail - 4 |
| Lifting /Back Injury - 32 | Cuts/Knife - 11    | Chipping - 3   | Strain - 3     |
| Contact - 37              | Pulling - 3        | Repetition - 4 | Other - 7      |
| Pinch Points - 17         | Burn - 3           | Fire - 6       |                |
| Collision- 9              |                    |                |                |

## FY2010 1st Half Class C Mishaps, First Aid Cases, and Near Misses



The above pie chart shows the Class C, Near Miss and First Aid Cases for the first half of FY2010. Slip/ Trips/ and Falls are up slightly and injuries from contact have also increase. Lost time injuries are on the same pace as FY2009, however the 3rd quarter of 2009 had the most lost time injuries. This could be due to more warm weather projects being performed. We had a class A mishap in the third quarter of FY 2010 involving a motor vehicle accident. Got an idea to help prevent injuries?

Please send it to the safety mailbox  
(MSCHQ\_Safety@navy.mil) and we will share it with the fleet.



**CARGO VESSEL (SUBCHAPTER I) DEFICIENCIES**

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The USCG conducted an analysis of all deficiencies recorded by C.G. Marine Inspectors while inspecting certificated commercial vessels (other than Offshore Supply Vessels) under Subchapter I. The purpose of this analysis was to identify the ten most common deficiencies to share with the owners/operators so problems can be rectified prior to scheduling the next Coast Guard examination. Two of the deficiencies are described below along with the applicable regulation and potential correction methods.

## *Fixed Carbon Dioxide*

Fixed Carbon Dioxide (46 CFR 91.25-20 and 147.65) All piping controls, valves and alarms need to be checked for proper operation and 90% charge has to be verified. The pressure drop through cylinder connections may not exceed 150 psi per minute, over a two minute period, while subjected to the 1,000 psi test pressure. Additionally, all carbon dioxide cylinders must be retested every 12 years. If cylinders ever have to be discharged at a time when it has been more than five years since they were pressure tested, they must be retested before recharging. Enclosure (1) to NVIC 6-72 lists the inspection requirements in one concise paragraph: "D.2.". The National Fire Protection Association provides the technical specifics for the inspection: "NFPA 12, Chapter 9.4.3".



## *Wiring Material and Methods*

Wiring Materials and Methods (Electrical Regulations: 46 CFR 111.60) Wires must be properly installed and connected in accordance with IEEE Std 45 sections 20 & 22 as well as IEC 92-3 and paragraph 8 of IEC 92-352. The use of temporary wiring where equipment must be hard wired is the most common finding (40%) and dead-end wires account for 18% of the inspection deficiencies. Insufficient mounting of cables as they run along bulkheads is also noteworthy. Operators can easily do a self-inspection prior to scheduling the exam. Make sure that all junction boxes have their covers in place (46 CFR 111.81).



## Health and Safety

# Obesity Is A Major Health Risk

The most prevalent weight category for American employees is now "obese" (40% of the work force). Obesity can lead to increased heart concerns, diabetes, high cholesterol, more frequent occurrences of cancer, more time off for surgeries and a generally less productive work force. Pleasingly plump isn't pleasing to the bottom line of health care claims. Obesity drives up health insurance plan premiums, \$735 higher on average per person per year. In addition, lost productivity can be as high as \$3,000 per year.

What's the difference between obesity and simply being overweight? According to the National Institutes of Health (NIH), the term overweight refers to body weight that is at least 10 percent over the recommended weight for a certain individual. Recommended weight standards are generated based on a sampling of the U.S. population or by body mass index (BMI), a calculation that assesses weight relative to height. In common terms, "overweight" refers to an individual with a BMI of more than 25. Of course, it's important to remember that being overweight may not only be the result of increased body fat, but the result of increased lean muscle as well. Obesity is generally defined as an excessive amount of body fat in relation to lean body mass. In numeric terms, obesity refers to a body weight that is at least 30 percent over the ideal weight for a specified height. More commonly, obesity refers to any individual with a BMI of more than 30.

Weight gain and obesity are caused by consuming more calories than the body needs – most commonly by eating a diet high in fat and calories, living a sedentary lifestyle, or both. However, the imbalance between calories consumed and calories burned can also be caused by a number of different physiological factors, including genetic and hormonal problems related to deficiencies in internal body functions. It is important to remember that obesity is not always caused by simple behavioral issues. In fact, endocrine researchers are leading exciting new research into the internal mechanisms that control metabolism, appetite, and satiety from food. For instance, genetic determinations such as the way a body expends energy, hormones that affect the way calories are processed, and other organ systems in the body can all affect appetite. For these reasons, today's physicians address a number of considerations when working with obese patients – and those considerations are increasingly going beyond just calorie counting and exercise.

The Centers for Disease Control and Prevention (CDC) is the nation's top agency that works to prevent and control disease including obesity. On its website, the CDC has the latest statistics on obesity trends among adults, children and adolescents in the United States. It also provides a state-by-state breakdown of obesity's economic impact on the U.S. health care system as well as an interactive map illustrating the growth of obesity in the U.S. since 1985.

From:

[www.nationalhealthcareadvisory.com](http://www.nationalhealthcareadvisory.com)

and [www.obesityinamerica.org](http://www.obesityinamerica.org)

## ENVIRONMENTAL

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[MEPC 60 Report](#)

During the International Maritime Organization's (IMO) 60th session of the Marine Environmental Protection Committee (MEPC), held in London between 22 and 26 Mar 2010, the Committee adopted three (3) Resolutions to MARPOL 73/78.

**Resolution MEPC.189(60)** adopted a new Chapter 9 Regulation 43 to MARPOL Annex I Regulations for the Prevention of Pollution by Oil. Regulation 43, which enters into force on 1 Aug 2011, reads as follows,

Regulation 43 Special requirements for the use or carriage of oils in the Antarctic area

1.0 With the exception of vessels engaged in securing the safety of ships or in a search and rescue operation, the carriage in bulk as cargo or carriage and use as fuel of the following:

1.1 crude oils having a density at 15°C higher than 900 kg/m<sup>3</sup>,

1.2 oils, other than crude oils, having a density at 15°C higher than 900 kg/m<sup>3</sup> or a kinematic viscosity at 50°C higher than 180 mm<sup>2</sup>/s; or

1.3 bitumen, tar and their emulsions,

shall be prohibited in the Antarctic area, as defined in Annex I, regulation 1.11.7.

2.0 When prior operations have included the carriage or use of oils listed in paragraphs 1.1 to 1.3 of this regulation, the cleaning or flushing of tanks or pipelines is not required.





**Resolution MEPC.190(60)** designated the North America Emission Control Area (ECA), under MARPOL Annex VI Regulation 13.6. This ECA enters into force on 1 Aug 2011.

The coordinates of the North American ECA will be contained in a new Appendix VII to MARPOL Annex VI, but basically it encompasses a zone 200 nm around the U.S., Canadian and French - Pacific, Atlantic and Gulf coastlines (Saint-Pierre-et-Miquelon off the Canadian Atlantic coast is French territory). This Resolution revises Annex VI Regulation 14.3 to read as follows:

3.0 For the purpose of this regulation, emission control areas shall include:

- 3.1 the Baltic Sea area as defined in regulation 1.11.2 of Annex I and the North Sea as defined in regulation 5(1)(f) of Annex V;
- 3.2 the North American area as described by the coordinates provided in appendix VII to this Annex; and
- 3.3 any other sea area, including any port area, designated by the Organization in accordance with the criteria and procedures set forth in appendix III to this Annex.

MARPOL VI Regulation 14 Sulphur Oxides (SOx) and Particulate Matter, prescribes the maximum sulfur content for fuel burned in the ECA:

1.50% m/m prior to 1 July 2010;

1.00% m/m on and after 1 July 2010; and

0.10% m/m on and after 1 January 2015.

Note that in accordance with MARPOL VI/14.7, ships are exempt from the sulfur content requirements for the North American ECA during the first 12 months after its designation (i.e. until 1 Aug 2012).

Also note that the above sulfur limits for the existing Baltic Sea and North Sea ECAs will become effective and enforceable on 1 Jul 2010, when the revised MARPOL VI enters into force.

And finally, **Resolution MEPC.191(60)** established 1 May 2011 as the date upon which the discharge requirements of MARPOL Annex V regulation 5(1)(h) shall take effect for the Wider Caribbean Region Special Area. Although the geographic boundaries of the Wider Caribbean Region had already been established in MARPOL Annex V for some time, under Regulation 5 (4) the discharge requirements did not become effective until the Committee received sufficient notifications from the countries with coastlines bordering the Special Area, that adequate garbage reception facilities were provided Regulation 5 prohibits the discharge of plastics and all other garbage (including paper products, rags, glass, metal, bottles, crockery, dunnage, lining and packing material), in Special Areas. Under Regulation 5(2)(c), food wastes which have been passed through a comminuter or grinder, and capable of passing through a screen with openings no greater than 25 mm, may be discharged in the Wider Caribbean Region as far as practicable from shore, but in any case not less than 3 nm from nearest land.

For further information contact Jim Fernan, Head, Fleet Standards Division, [james.b.fernand@navy.mil](mailto:james.b.fernand@navy.mil), 202-685 5764.

## Namesake Section



**T-AE 35 USNS KISKA** is named after Kiska volcano in the Aleutian Islands. The USNS *Kiska* is one of five ammunition ships owned and operated by Military Sealift Command, and one of the ships in the Naval Fleet Auxiliary Force. The ship was laid down on 8 April 1971 at Ingalls Shipbuilding, Pascagoula, Mississippi as the USS *Kiska* (AE-35) and was launched on 11 March 1972. The USS *Kiska* was decommissioned and that same day entered service with the Military

Sealift Command as the USNS *Kiska* (T-AE 35). The USNS *Kiska* is the eighth and final ship of the *Kilauea* class ammunition ships.



**T-AKR 296 USNS GORDON** Honoring Master Sergeant Gary Ivan Gordon, United States Army, who distinguished himself by actions above and beyond the call of duty on 3 October 1993 while serving as Sniper Team Leader, United States Army Special Operations Command with Task Force Ranger in Mogadishu, Somalia. Master Sergeant Gordon's sniper team provided precision fire from the lead helicopter at two helicopter crash sites while subjected to intense automatic weapons and rocket propelled grenade fires. When Master Sergeant Gordon learned that ground forces were not immediately avail-

able to secure the second crash site, he and another sniper unhesitatingly volunteered to be inserted to protect the four critically wounded personnel. After his third request to be inserted, Master Sergeant Gordon received permission to perform his volunteer mission. Master Sergeant Gordon was inserted one hundred meters south of the crash site. Equipped with only his sniper rifle and a pistol, Master Sergeant Gordon and his fellow sniper, fought their way through a dense maze of shanties and shacks to reach the critically injured crew members. Master Sergeant Gordon immediately pulled the pilot and the other crew members from the aircraft and established a perimeter which placed him and his fellow sniper in the most vulnerable position. Master Sergeant Gordon used his long range rifle and side arm to kill an undetermined number of attackers until he depleted his ammunition. After his team member was fatally wounded and his own rifle ammunition exhausted, Master Sergeant Gordon returned to the wreckage, recovered a rifle with the last five rounds of ammunition and gave it to the pilot with the words, "good luck." Then, armed only with his pistol, Master Sergeant Gordon continued to fight until he was fatally wounded. His actions saved the pilot's life.



**T-ATF 169 USNS NAVAJO** is named after the Native American people of the Southwestern United States. NAVAJO's keel was laid on 14 December 1977 by the Marinette Marine Corporation at Marinette, Wisconsin. Launched on 20 December 1979, and delivered to the U.S. Navy on 13 June 1980, NAVAJO was assigned to the Military Sealift Command (MSC), and placed in non-commissioned service as USNS NAVAJO (T-ATF-169) in 1980.

# Recent Incidents



CIVMAR was carrying a box down a ladder when he slipped and fell the last 3 steps.

**Causal Factors** – slipped on ladder

**Lessons Learned** – CIVMAR did not have one hand on the handrail. Many of the mishaps on ladders involve CIVMARS carrying objects. Remember one hand for yourself!



During a docking evolution a stopper parted while transferring a mooring line from a capstan to a deck bitt.

**Causal Factors** – Stopper parted

**Lessons Learned** – 4 CIVMARS were injured after the stopper parted. CIVMARS must know danger areas while handling mooring lines.



During a fire drill in full fire fighting gear including SCBA, a CIVMAR began to feel dizzy.

**Causal Factors** – Over heated.

**Lessons Learned** – Prior to strenuous drills or other work the importance of extra hydration should be emphasized.



While moving ammo using an MHE, the driver backed over a CIVMAR's foot

**Causal Factors** – MHE rolled over CIVMAR's foot

**Lessons Learned** – MHE drivers should not back up until they are sure the area is clear. Also, CIVMARS working in the vicinity of MHEs should not walk behind MHEs being operated.



While lowering a lifeboat for a drill during a shipyard period, the forward fall inadvertently released then the weight of the boat caused the aft fall to be ripped out of the boat. The boat fell approximately 30 feet to the water.

**Causal Factors** – Probable cause is the forward fall was not connected properly.

**Lessons Learned** – Shipyard workers connected the falls after working on the lifeboat. Ships crew must supervise connecting of the falls and double check connections prior to lowering.



A valve for hotel steam needed repair. The pressure was bled down to zero but time was not allotted for cooling of the steam line. When the valve was opened CIVMARS were splashed with hot water.

**Causal Factors** – Hot water contacting CIVMARS.

**Lessons Learned** – Steam lines should be given time to cool down prior to commencing any work. Bleeding off the pressure is not sufficient.



## Readiness Through Safety !

# This Date in History

MSC Safety Manager  
Kevin Kohlmann  
MSCHQ\_Safety@navy.mil  
202-685-5722

MSC Environmental Manager  
Jim Fernan  
james.b.fernan@navy.mil  
202-685-5764

Fred Woody  
Luke Wisniewski  
Dr. John Austin  
Bob Scofield  
Robert Kenney  
Jim Hayes  
Mike Brown  
Jonathan Berman

MSFSC Safety-ISM@navy.mil  
757-443-2722

DP Francis Pelosi

Deputy DP Mark Stoegbauer

Frank Ridge  
Jim Mahon  
Daphanie Brown  
Perry Corbett  
Chet Barnett  
Mark Cook



14 April 1912 - **RMS TITANIC** (Great Britain) was a passenger liner and the world's largest ship at the time. During its maiden voyage, the TITANIC collided with an iceberg, buckling a part of the hull and mortally wounding the ship. In total, only 31.8% of the ship's 2,228 people survived, leaving 1,523 dead. This disaster was the catalyst for major reforms in safety for the shipping industry and is arguably the most famous maritime disaster of all time.

7 May 1915 - **RMS LUSITANIA** was an ocean liner owned by the Cunard Line and built by John Brown and Company of Clydebank, Scotland. She was torpedoed by SM U-20, a German U-boat and sank in eighteen minutes, eight miles (15 km) off the Old Head of Kinsale, Ireland, killing 1,198 of the 1,959 people aboard. The sinking turned public opinion in many countries against Germany, and was instrumental in bringing the United States into World War I.

27 May 1941 – **BISMARCK**, the German battleship was one of the most famous warships of the Second World War. Bismarck only took part in one operation during her brief career. She and the heavy cruiser PRINZ EUGEN left Gotenhafen on the morning of 19 May 1941 for Operation Rheinübung, during which she was to have attempted to intercept and destroy convoys in transit between North America and Great Britain. When BISMARCK attempted to break out into the Atlantic, she was discovered by the Royal Navy and brought to battle in the Denmark Strait. During the short engagement, the British battlecruiser HMS Hood, flagship of the Home Fleet and pride of the Royal Navy, was sunk after several minutes of firing. In response, British Prime Minister Winston Churchill issued the order to "Sink the Bismarck," spurring a relentless pursuit by the Royal Navy. Two days later, with BISMARCK almost in reach of safer waters, Fleet Air Arm Swordfish biplanes launched from the carrier HMS Ark Royal torpedoed the ship and jammed her rudder, allowing heavy British units to catch up with her. In the ensuing battle, Bismarck was heavily attacked for almost two hours before sinking.

16 April 1947 – **SS GRANDCAMP** was a French registered ex-liberty ship which caught fire and exploded dockside while being loaded with ammonium nitrate at Texas City, Texas. In what came to be called the Texas City Disaster an estimated 581 people, including 28 firefighters, were killed and 5,000 were injured. The fire detonated approximately 2,300 tons of ammonium nitrate. These events also triggered the first ever class action lawsuit against the United States government, under the then-recently enacted Federal Tort Claims Act (FTCA), on behalf of 8,485 victims.